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THE BRYOLOGIST

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No. 6

NORTH AMERICAN SPECIES OF THE GENUS RAMALINA.—PART II.

R. HEBER HOWE, JR.

SERIES: **Tenuicorticatae** ser. nov.

Medulla arachnoid, cortex thin (20–30 μ), hyphae not divaricate above gonidia.

KEY TO THE SERIES *Tenuicorticatae*

Thallus *with* wide reticulate sorediate laciniae

Laciniae *with* palmate-laciniate apices..... *crispatula*

Laciniae *without* palmate-laciniate apices..... *Duriaei*

KEY TO THE SERIES *Myelopoeae* (IN PART)

Thallus *without* wide, reticulate laciniae

Laciniae compressed, *non-linear*

Thallus rigid, soredia *granulate*

Apices *blunt*..... *polymorpha*

Apices *acuminate*..... var. *emplecta*

Thallus subflaccid, soredia *powdery*..... *pollinaria*

Subpulvinate..... var. *humilis*

Laciniae subcompressed, *linear*

Apices *simple*

Laciniae robust, *branched*, concolorous, KOH+..... *calicaris*

Laciniae slender, simple, black above, KOH—..... *cuspidata*

Apices multifid-sorediate, KOH+..... *subfarinacea*

Ramalina Duriaei (DeNot.) Bagl.

SYNONYMY: *Ramalina pollinaria* var. *Duriaei* DeNot. Frammenti Lich. Giorn. Bot. Ital. **2**: 216. 1846.

Ramalina Duriaei Bagl. Lich. In Sard., Giorn. Bot. Ital. **11**: 58. 1879.

Non *Ramalina evernioides* Nyl. Proc. Lich. Gall. et Agl. **47**. 1857,

also Act. Soc. Linn. Burdigal **21**: 293. 1857. = *Ramalina*

maciformis Del.

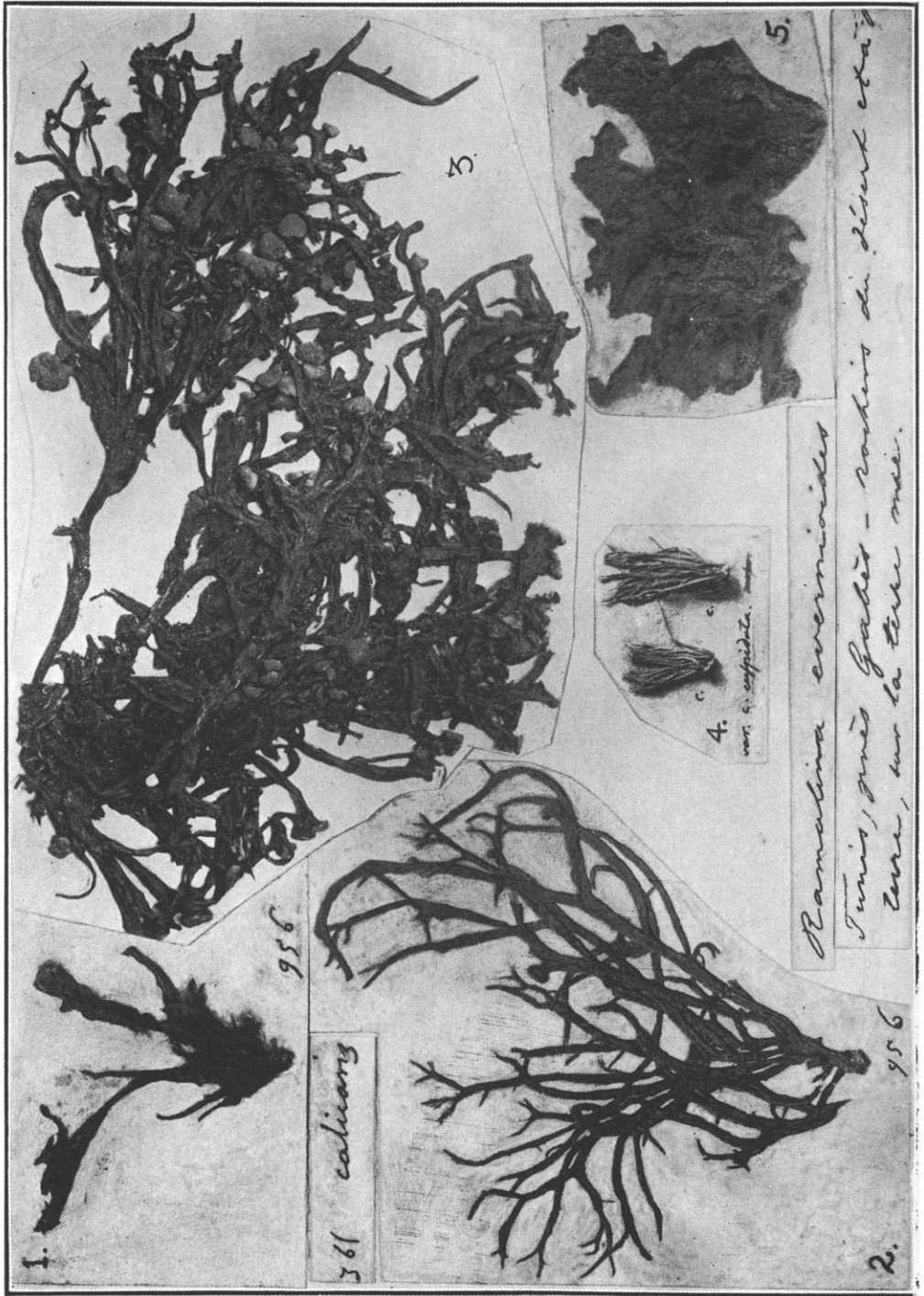
Ramalina evernioides of many authors.

TYPE: Not traced. The type of *R. evernioides* is in the Museum d'Histoire Naturelle, Paris, not in the Cosson Herbarium, *fide* author.¹

¹ Type locality: "prope Gabes," Tunis, Africa. (On earth and rocks.)

Original description: "thallo albo vel albido, sorediis vix ullis, crebre minuteque reticulatim rugoso, apotheciis pallidis demum majusculis." l. c.

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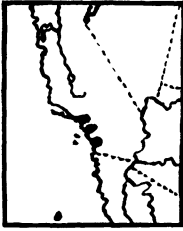


FIG. 1. Distribution of *R. Duriaei*.

TYPE LOCALITY: "Algeri" "sui rami."

ORIGINAL DESCRIPTION: "R. caespitosa, thallo foliaceo, chartaceo, fiaccido, venoso-rugoso, areolato, opaco, dilute glauco vel fulvo-lutescente, varie laciniato, segmentis cuneato-dilatatis, irregularibusve, polymorphis, margine lacero-fimbriatis, fimbriis dentiformibus vel elongatis, pinnatim digitatimve dispositis, difformibusque, facie, margine hinc inde, vel plerumque apice epidermide secedente albo-maculatis, vix vero pulverulentis; apotheciis sparsis sessilibus, basilata adnatis, tenuibus margine insigniter incurvato, tandem-eroso denticulato concavis, concoloribus, fulvescentibus; sporidiis cylindraco-oblongis, curvulis, diametro quaduplo longioribus." l. c.

FIGURE: Smith, Eng. Bot. pl. 1607 (upper figure). 1806.

DIAGNOSIS: *Thallus* caespitose, compressed, flaccid, *reticulate-rugose*, *apothecia* marginal, *spores* curved.

DESCRIPTION: *Thallus* caespitose (max. alt. 5 cm.), flaccid; stramineous to virescent; *cortex* reticulate-rugose, sorediate; *laciniae* compressed, expanded, lacerate, (max. 1 cm.), apices lobulate. *Apothecia* very rare (unobserved from our area), marginal, concave, marginate, disk buff or concolorous. *Spores* ellipsoid, curved, $\frac{10-15}{3.5-4.5} \mu$.

CONTINGENT PHASES: With orange cephalodia.

SUBSTRATA: On trees and shrubs. (Type of *evernioides* Nyl. on earth.)

DISTRIBUTION: Rare in the Austral to Transition Zone on the southern coast of California.

STATIONS: California: Santa Monica Mts.; Pasadena; Pt. Loma; San Diego; San Roque Island; Carpinteria. West Indies: St. Vincent.

OBSERVATIONS: This distinct, non-chondroid, corticolous species was first sent to me by Dr. H. E. Hasse from Pt. Loma, San Diego (BRYOLOGIST 13: 111. 1910.). This determination was confirmed by Dr. Bouly des Lesdain. It has since been reported from various stations and almost invariably bears orange cephalodia. Its expanded, membranous, lacinate laciniae, completely reticulate-rugose, always distinguishes the species, though our plants have been previously determined as *Evernia prunastri*, *R. pollinaria*, the variety *humilis* of *polymorpha*, and even *testudinaria* by Nylander himself. There is a specimen in the U. S. National Herbarium determined by Dr. Farlow, labeled *homalea*, "abnormal form." Dr. H. E. Hasse (*in litt.*) states that he has collected the plant recently at Newport, Orange Co., and Palo Verde, Los Angeles Co., Cal. (Contr. U. S. Nat. Herb. 17: 108. 1913.)

NOTE: *Ramalina crispatula* Nyl. (Recog. mono. Ram. 154. 1870.)

The Abbé Hue (Lich. Cal. 1-2. 1905.) records this "rare espèce" from Laguna. Nylander diagnosed the species as follows: "Est quasi *R. evernioides* thallo crassiore (crassitie saepe 1-2 millimetrorum), plano-laevigato (rarius hinc inde scrobiculoso-inaequali vel plicato-rugoso), lacinioso, laciniiis apice palmato-

divisis subcrispis." l. c. TYPE LOCALITY: "Canaria." The Abbé Hue kindly sent me this material for examination. The species appears to be a slightly more rigid plant with laciniate slender apices. In the present writer's opinion it could hardly rank higher than a variety of the former species. Most of our material is distinctly rugose, but well divided above and might in part be referred here. The Abbé Hue also records a form *minima* Hue (Lich. Extra-Eu. 63. 1901.) from Florida.

SERIES: *Myelopoeae* Wain. Class. Nat. et Morph. Lich. Brésil 16. 1890.

Medulla arachnoid, cortex thick (65–80 μ) hyphae divaricate above gonidia.

OBSERVATIONS: I am commencing the Series *Myelopoeae* with this species so that the question of the *calicaris* nomenclature may be settled at the outset, and am giving a diagnosis, etc., so that its true status may be made clear.

A. Cortex glabrous.

Ramalina calicaris (L.) Fr., Emend.

SYNONYMY: *Lichen calicaris* Linn. Spec. Plant. 2: 1146. 1753. As to name bringing synonymy, *Ramalina calicaris* (L.) c. *canaliculata* Fr. Lich. Europ. 30. 1831, not, however, as to plant described.

Ramalina scopulorum (Retz.) Ach. of most authors.

TYPE: In the Linnean herbarium, Burlington House, London, are six sheets of *Ramalina* specimens. Seven plants on these sheets were referred to by Dr. Wainio. Five he called *Ramalina calicaris* f. *canaliculata* Fr., and two *Ramalina scopulorum* (Retz.) Ach. Two of these sheets only may be considered to be types, as they alone are labeled in Linneus' handwriting, the others having been added to the herbarium from later sources. Those sheets labeled by Linneus bear the name and number of Species Plantarum, and also the Flora Suecica number (see figure). One small specimen of the first sheet though old and abraded probably represents the so-called *calicaris* stock, and cannot be referred to either the form *canaliculata* Fr. or *scopulorum* Retz. Though in two of its laciniae it suggests states of *fraxinea*, it cannot be said to bear out either Linneus' description or the Dillenian or Vaillant plates he cites, which all accord in the main. The other perfect specimen of this sheet and the remaining type of the other sheet are without doubt *scopulorum*, and the two specimens of this species referred to by Dr. Wainio.

If we now turn to the founder of the genus *Ramalina* we will see that Acharius placed *Lichen calicaris* of Linneus in his synonymy of *Ramalina scopulorum*. It was only later that Fries made *calicaris* L. synonymous with his variety *canaliculata*. Though it is difficult to drop a name as old as *scopulorum*, especially since a reliable type specimen exists in the Retzian herbarium at Lund (*fide* author), yet the fact that the Retzian figure-reference refers to a Dillenian plate unquestionably representing a *Rocella*, a much argued point, gives us added ground for so doing. It is true that the Dillenian herbarium proves by its composite specimens (*fide* author, see Crombie) that he, as has been said of Linneus, did not distinguish between *scopulorum* and *calicaris* (*sensu* Nylander). Never-

theless Linneus' description is quite diagnostic of Retzius' *scopulorum*, certainly more so than of *canaliculata*, as well it may be, judging from the material he labeled in his herbarium; and certainly Acharius' procedure is difficult to waive in favor of that of Fries, who seems to have followed certain less discriminating authors than Acharius.

TYPE LOCALITY: "Europae."

ORIGINAL DESCRIPTION: "foliaceus erectus linearis ramosus lacunosus convexus mucronatus." l. c.

FIGURES: Ach. Kong. Vet. Acad., Nya. Handl. 18: pl. 9 f. 2F. 1797. Westring, Svenska Lafrarnas Farghistoria, pl. 23, f. 13. 1805.

DIAGNOSIS: *Thallus* caespitose, compressed, linear, rigid, apothecia lateral, spores straight, KOH+.

DESCRIPTION: *Thallus* caespitose (max. alt. 20 cm.), rigid, cinerea-virescent; cortex nitidous, striate, sublacunose; *lacinae* branched, compressed, linear or sublinear, sulcate (max. width 6 mm.), apices attenuate. *Apothecia* marginal, mostly subterminal, subpedicellate, concave, at length convex, marginate finally immarginate (max. diam. 10 mm.), disk buff. *Spores* ellipsoid, straight, $\frac{12-19}{4.5-6.5} \mu$.

OBSERVATIONS: Though this species was included by Tuckerman on Nylander's authority (Synop. 1860) as found in North America, no material has been discovered in the herbaria examined. Nylander in 1870 included the allied species *cuspidata*, and other authors have cited this species in reference to our lichen flora. I believe, however, that the material from the Alaskan coastal islands which is generally referred here will be found to represent *Ramalina subfarinacea* Nyl., discussed below.

Ramalina cuspidata (Ach.) Nyl.

SYNONYMY: *Ramalina scopulorum* β *cuspidata* Ach. Lich. Univ. 605: 1810.

Ramalina cuspidata Nyl. Recog. Mono. Ram. 158. [60] 1870.

TYPE: In the Acharian herbarium, Universitetets Botaniska Institution, Helsingfors, *vide* author. Duplicate material in the Linnean Society Herbarium, Burlington House, London, *vide* author.

TYPE LOCALITY: "consortio cum priori (a)." i. e. "Suecia, Dania et Anglia."

ORIGINAL DESCRIPTION: "thallo caespitoso, ramis compressiusculis subsimplicibus erectis confertissimis laeviusculis subulatis, apicibus nigricantibus." l. c.

FIGURE: [Dill. Hist. Musco. pl. 17. f. 39a. 1741.]

DIAGNOSIS: *Thallus* caespitose, subcompressed, attenuate, rigid, apices black, apothecia subterminal, spores straight $\frac{10-18}{4-7} \mu$. KOH—.

DESCRIPTION: *Thallus* caespitose (max. alt. 8 cm.), rigid, cinerea-virescent; cortex nitidous, tuberculate, sublacunose, fistulous; *lacinae* subsimple to branched, subcompressed, apices terete, attenuate (black Ach.). *Apothecia* subterminal, concave at length convex, marginate finally immarginate (max diam. 5 mm.), disk buff. *Spores* substraight, $\frac{10-18}{4-7} \mu$.

OBSERVATIONS: This species, attributed to North America in 1870, has since been referred to as a member of our lichen flora by Delamare and Macoun. Mr. Merrill was the first to question our material as *cuspidata*, thinking it more nearly referable to the tropical *Javanica* Nyl.¹ Though *cuspidata* may still be found in our area, I believe, as already stated that our plants will be found to be the boreal *subfarinacea*. Our material has the positive reaction KOH+. Nylander did not consider the often fistulous states of *scopulorum* and *cuspidata* a sufficient reason to include them in his "*Stirps Ramalina pusilla*," though he placed them directly before it. Some authors have failed to detect other than differing chemical reactions to separate these species. Acharius distinguished them on account of the present species having smaller, slender, attenuate, black-tipped laciniae; others claiming also a more tuberculate cortex for *cuspidata*. They are no doubt separable by the *Acharian* diagnosis.

Ramalina subfarinacea Nyl.

SYNONYMY: *Ramalina scopulorum subfarinacea* Nyl. Flora **30**: 426. 1872.

Ramalina subfarinacea Nyl. Flora **31**: 66. 1873.

Ramalina farinacea c. *angustissima* Anzi, Lich. Etrur. No. 6. 1863.

Nomen nudum.

Ramalina angustissima Wain. Not. syn. lich., Meddel. Soc. Fauna Fl. Fenn. **14**: 21. 1888.

TYPE: Not traced [Anzi, Lich. Etrur. No. 6, Fas. 1. 1863.]

TYPE LOCALITY: "Coll del Pall, altit. 800 metr., in ipsis Hispanorum finibus." l. c. ["Florentiani Anzi."]

ORIGINAL DESCRIPTION: "Sporae longit. 0.012–15 millim., crassit. 0.004–6 millim." l. c. "laciniae are short and shining, often pulverulento-sorediiferous." See Crombie, Journ. Bot. **10**: 74. 1872, also British Lich. 197. 1894.

FIGURE: None.

DIAGNOSIS: *Thallus* caespitose, *subcompressed*, attenuate, *rigid*, apices *multifid-sorediate*; apothecia marginal; spores straight. KOH + yellowish.

DESCRIPTION: *Thallus* caespitose (max. alt. 6 cm.), rigid, pale virescent; cortex nitidous, tuberculate, fistulous; *laciniae* subsimple or branched, subterete or subcompressed, apices generally multifid, sorediate, terete, attenuate. *Apothecia* uncommon, concave at length convex and gibbous, marginate finally immarginate, (max. diam. 4 mm.), disk buff. Spores ellipsoid, straight, $\frac{12-16}{4-7} \mu$.

CONTINGENT PHASES: Unobserved.

SUBSTRATA: Maritime rocks and tundra. [Cottonwood tree.]

DISTRIBUTION: Alaska.

STATIONS: Alaska: Atka Island; St. Paul's Island; St. George.

OBSERVATIONS: This species, suggesting *cuspidata* more strongly than the saxicolous states of *farinacea*, came to my notice through specimens collected by Mr. F. B. McKechnie during July, 1911.² As I have already said, I believe

¹ This is a subtropical species, and quite distinct.

² See Howe, Botanical Gazette. **53**: Dec., 1913.

questionable material referred heretofore to what has been known as the *scopulorum* stock belongs here. The species is distinguished by its rigid, pale, subterete laciniae, with their more or less multifid, sorediate tips.¹ Its non-costate laciniae separate it from narrow states of *polymorpha*,—its rigid cartilaginous thallus from *pollinaria*. The smaller states are separable from *intermedia* on account of their rigid multifid tips and thalline structure.

Ramalina polymorpha Ach.

SYNONYMY: *Lichen polymorphus* Ach. Kongl. Vet. Acad. Nya. Handl. 18: 270. 1797.

Ramalina polymorpha Ach. Lich. Univ. 600. 1810.

Ramalina polymorpha a. *ligulata* Ach. Meth. Lich. 265. 1803.

TYPE: Though apparently no specimen labeled *Lichen polymorphus* is now in the Acharian herbarium, Universitetets Botaniska Institution at Helsingfors, there exists authentic Acharian material representing all his varieties, *fide* Dr. Fred. Elfving.

TYPE LOCALITY: "in insulis sinus Botnici Ostro-Gothiae Uplandiae Smolandiae." i. e. Scandinavia.

ORIGINAL DESCRIPTION: "subcartilagineus erectiusculus rigidus compressus laciniato-ramosus polymorphus pallide lutescens; lacunulis sparsis fariniferis; glomerulis scutellisque congestis terminalibus." l. c.

FIGURE: Ach. Kongl. Vet. Acad. Nya. Handl. 18: pl. 11: f. 3, A-Z. 1797.

DIAGNOSIS: *Thallus* caespitose, compressed, *sublinear*, rigid, *longitudinally rugose*, *granular-sorediate*, apothecia marginal, spores straight.

DESCRIPTION: *Thallus* caespitose (max. alt. 4 cm.), rigid, virescent at length stramineous; *cortex* glabrous, often foraminous, longitudinally rugose, granular-sorediate; *laciniae* subsimple, compressed, attenuate, apices obtuse. *Apothecia* rare, marginal concave, marginate (max. diam. 8 mm.), disk buff. *Spores* ellipsoid, straight or substraight, $\frac{11-16}{4-5} \mu$.

CONTINGENT PHASES: Unobserved.

SUBSTRATA: On maritime (and alpine) rocks.

DISTRIBUTION: Rare in the Boreal Zone on the Alaska Peninsula and Islands, and perhaps southward.

STATIONS: Alaska: Arakamtchetchere Island. Washington: Friday Harbor.

OBSERVATIONS: This saxicolous species, of which Tuckerman had seen no typical specimens, must be included, if only on the ground of the Acharian material, which includes a specimen from "Amer. bor."² This specimen he referred to his variety *ligulata* which is inseparable from his type, as has been

¹ Fertile examples are esorediate and less multifid.

² The following records are also included in our literature: Arctic America, *Richardson*. Alaska, *Rothrock* and *Cummings*; Maine, *Eckfeldt*; Minnesota, *Fink*=*humilis* (*See* Contr. U. S. Nat. Herb. 14: 205. 1910); New York, *Halsey*; New Hampshire, *Howe*, *fide* *Wheelock*; Newfoundland, Cape Breton, Alaska, Anticosti, Prince Edwards Island, Nova Scotia, Quebec, Alaska, *Macoun*; Massachusetts, *Cummings*; Pennsylvania, Newfoundland and Labrador, *Eckfeldt*; *Muhlenberg*; and New England, *Tuckerman*. But few of these records are supported, however, by authentic material.

pointed out by Nylander. *Polymorpha* is to be distinguished from *pollinaria* on account of its larger, rigid thallus, *completely longitudinally costate-rugose* laciniae, and its always *granular* soredia. The membranous, inflated, at length powdery-sorediate apices of the flaccid laciniae of *pollinaria* served to distinguish it from the present species, which seems to be invariably saxicolous and generally maritime. The at first granular soredia and often partially rugose laciniae of specimens of *pollinaria* var. *humilis* often lead one to determine such plants as *polymorpha*. The material from Yukon (Bull. Torr. Bot. Club 38: 292. 1911.) was determined by the author as this species. The specimens were collected on "Slide Rock," are granulate-sorediate, but their small sized, subpulvinate, flaccid, subrugose laciniae make me believe that they should be referred to *humilis*.

Ramalina polymorpha var. *emplecta* Ach.

SYNONYMY: *Parmelia polymorpha* ε. *emplecta* Ach. Meth. Lich. 267. 1803.

Ramalina polymorpha ξ *emplecta* Ach. Lich. Univ. 601. 1810.

TYPE: In the Acharian herbarium, Universitetets Botaniska Institution, Helsingfors, *fide* author.

TYPE LOCALITY: Not given.

ORIGINAL DESCRIPTION: "lacinii erectis teretiusculis ramosissimis, ramis tenuissimis pulverulento-scabridis acuminatis." l. c.

FIGURE: Ach. Kongl. Vet. Acad., Nya Handl. 18: pl. 11, f. 3. P. Z.

DIAGNOSIS: *Thallus* caespitose, compressed, laciniae *much branched*, apices *slender and acuminate*.

DECRPTION: *Thallus* caespitose (max. length 5 cm.), rigid, virescent at length stramineus; *cortex* glabrous, often foraminous, longitudinally rugose, granular-sorediate; *laciniae* much branched, compressed, apices acuminate. *Apothecia* unobserved.

SUBSTRATA: On maritime rocks.

DISTRIBUTION: St. Paul's Island, Alaska.

OBSERVATIONS: Nylander (Enum. Lich. Freti Behr. 85. 1888.) states that Dr. Bean's specimen, recorded as the type species by Rothrock (Proc. U. S. Nat. Mus. 7: 1. 1884.), is referable to this variety and constitutes our only record. The variety is characterized by its many slender, acuminate apices.

Ramalina pollinaria (Westr.) Ach.

SYNONYMY: *Lichen pollinarius* Westr. Kong. Vet. Acad., Nya Handl. 1795 (publication date 1794, *fide* Ach.).

Ramalina pollinaria Ach., Lich. Univ. 608. 1810.

TYPE: Westring type unknown. In the Acharian herbarium, Universitetets Botaniska Institution, Helsingfors, are the varietal types, *fide* Dr. Fred. Elfving.

TYPE LOCALITY: Sweden?

ORIGINAL DESCRIPTION: "foliaceus erectus cespitosus: foliis divisis sublacunosus polline conspersis; peltis terminalibus concoloribus." l. c.

FIGURE: Ach. Kong. Vet. Acad., Nya Handl. 18: pl. 11, f. 2F. 1797.

DIAGNOSIS: *Thallus* caespitose, compressed, *flaccid*, apices bursting with *powdery-soredia*, apothecia subterminal; spores straight.

DESCRIPTION: *Thallus* caespitose (max. alt. 1.5 cm.), flaccid or subflaccid, stramineous to virescent; *cortex* rarely rugose *below*, powdery-sorediate; *laciniae* compressed, lacerate (max. width 4 mm.), apices vaulted or bursting, with white farinose soredia. *Apothecia* rare, subterminal, concave, marginate (max. diam. 3 mm.), disk buff. *Spores* ellipsoid, straight or substraight, $\frac{10-13}{4-6} \mu$.

CONTINGENT PHASES: (a) *Laciniae* short subpulvinate (max. alt. 16 mm.) lacunose, scattered with soredia (= *R. pollinaria* β . *humilis* Ach. Lich. Univ. 609. 1810. TYPE at Helsingfors. ORIG. DESCRIPT.: "laciniiis aggregato-complicatis brevibus lacero-laciniatis, furfum passim latioribus glauco cinerascenscentibus pulverulentis, maculis lateralibus soredi formibus latissimis confluentibus pulveraceis." l. c.)

SUBSTRATA: On trees, rarely on rocks = *humilis*.

DISTRIBUTION: Very rare in the Upper Transition to Boreal Zone from California and New Mexico to the Yukon.¹

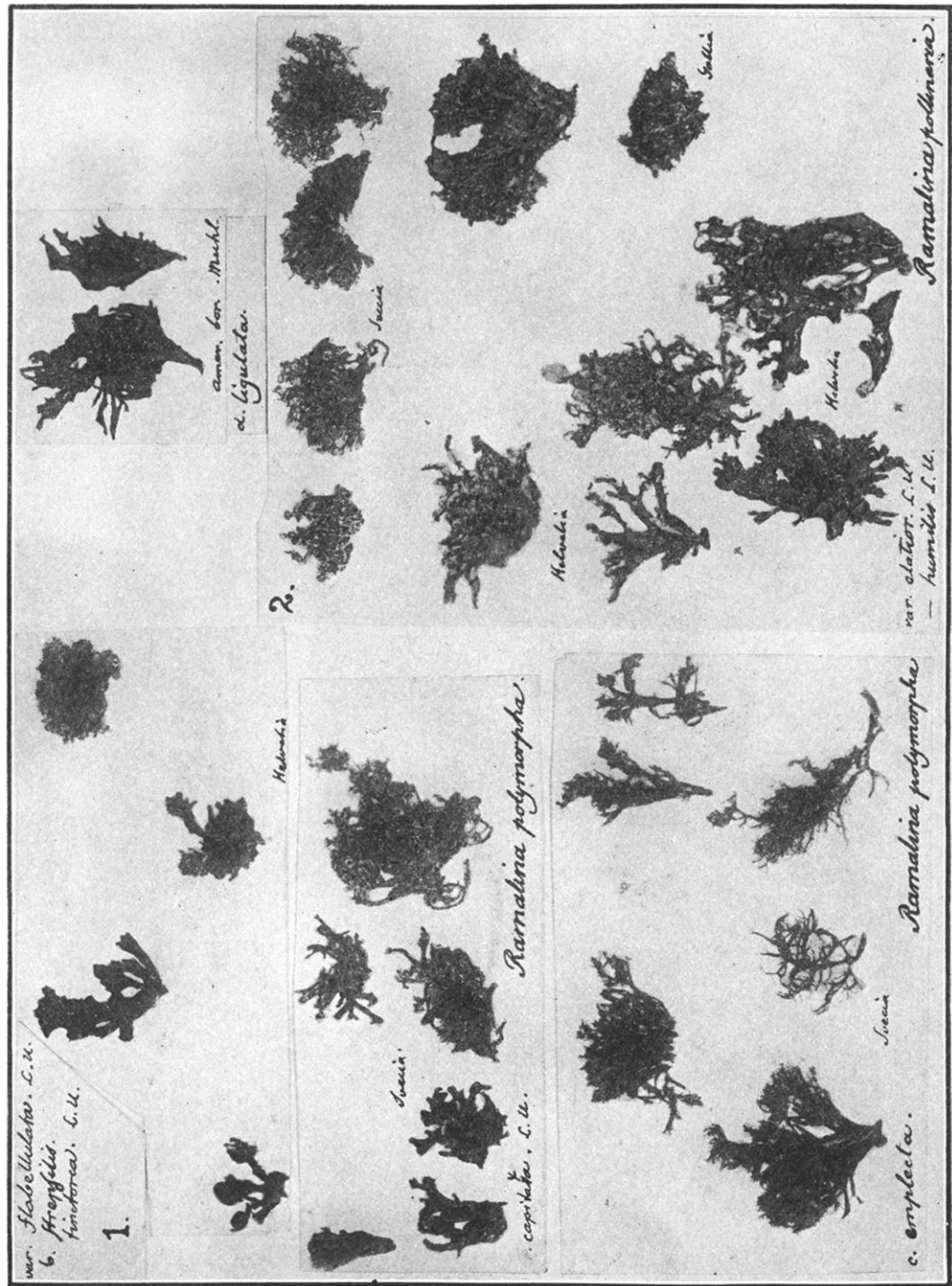
STATIONS: Yukon, Dawson. New Mexico. Minnesota, Palisades. California, Pasadena; San Jose. Rhode Island. Massachusetts, Beverley, Salem. Vermont, Mt. Mansfield.

OBSERVATIONS: This generally corticolous species was evidently confused by Tuckerman with forms of *farinacea* (*intermedia* = New England records). I have little typical material from our area.² This species may be distinguished by its *subflaccid* *laciniae* which never show throughout longitudinal parallel rugae as in the more rigid maritime *polymorpha*. The inflated tips with generally white powdery non-granulate soredia offer another good character for determination. The phase or variety *humilis* is the plant found in our area and is more difficult to distinguish from *polymorpha*, yet it differs in several points. Though its *laciniae* are lacunose, they are never parallel-rugose *throughout*, never rigid, and always with bursting sorediate apices. *R. humilis* is subpulvinate, and scattered with granulate and confluent soredia, and thus approaches *polymorpha*. This latter character, as I have already said, caused me to mis-determine the plants collected in the Yukon. Mr. Merrill has reported this phase from San Juan Islands, Washington (BRYOLOGIST 11: 51. 1908). Other authors have recorded it as follows: Ohio, *Fink* and *Bogue*; Maine, *Eckfeldt* and *Harvey*; South Dakota, *Fink*; Newfoundland and Labrador, *Eckfeldt*; New Mexico, *Tuckerman*; California, *Hasse*; New Hampshire, *Howe* *fide* *Wheelock*; Massachusetts, *Sprague*; and *Cummings*; New York, *Harris*; North Carolina, *Merrill*; Newfoundland, *Arnold*; and Alaska, *Macoun*. This species is still hardly more than a hypothetical member of our flora; it having never occurred in a fertile or absolutely typical state. Its exact range is uncertain.

[To be continued.]

¹ No distributional maps are given for species whose range cannot be definitely defined.

² See Merrill, BRYOLOGIST 14: 36. 1911.



EXPLANATION OF PLATES VIII-IX

Plate VIII

1. The dubious Linnean type of *Ramalina calicaris* at London. (Nat. size.)
2. One of the determinable Linnean types of *Ramalina calicaris* at London.
3. The Retzius type of *Lichen scopulorum* at Lund. (Nat. size.)
4. Acharian authentic material of *Ramalina scopulorum* var. *c. cuspidata* at London. (Slightly reduced.)
5. The Nylander type of *Ramalina evernioides* at Paris. (Nat. size.)

Plate IX

1. The Acharian types of *Parmelia polymorpha* and the varieties *flabellulata*, *strepsilis*, *tinctoria*, *capitata*, *ligulata*, and *emplecta* at Helsingfors. (Nat. size.)
 2. The Acharian types of *Ramalina pollinaria* and the varieties *elatior* and *humilis* at Helsingfors. (Nat. size.)
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NORTH AMERICAN FLORA, Vol. 15, Parts 1 and 2

Sphagnaceae—Leucobryaceae.

Every student of North American Mosses has looked forward with eagerness to the appearance of Volume 15, and the two parts already issued will receive a warm welcome.

Part 1 includes the *Sphagnaceae* by Albert LeRoy Andrews, the *Andreaeaceae* by Elizabeth Gertrude Britton and Julia Titus Emerson, also the *Archidiaceae*, *Bruchiaceae*, *Ditrichaceae*, *Bryoxiphiaceae*, *Seligeriaceae*, by Mrs. Britton. Part 2, *Dicranaceae*, *Leucobryaceae*, by Robert Statham Williams.

The style and arrangement, the exclusiveness and inclusiveness are in keeping with the other parts already published. No work on North American mosses has ever been so inclusive or complete, as the range includes all the Americas except South America and adjacent islands.

The arrangement of families and genera in the main follows Engler and Prantl, but the subfamilies of the *Dicranaceae* are in many cases raised to family rank, a procedure that is of questionable desirability.

The conservative attitude shown in the matter of creating new species will meet with general approval we feel sure. The number of new species is very few—seven were all that were noted—and these were from the little explored regions of the range.

Linnaeus, 1753, is taken as the starting point of binomial nomenclature in mosses as in flowering plants and there are no startling innovations in nomenclature. Most of the names used that differ from those in our earlier literature have become fairly familiar to those who have used recent publications on North American mosses.